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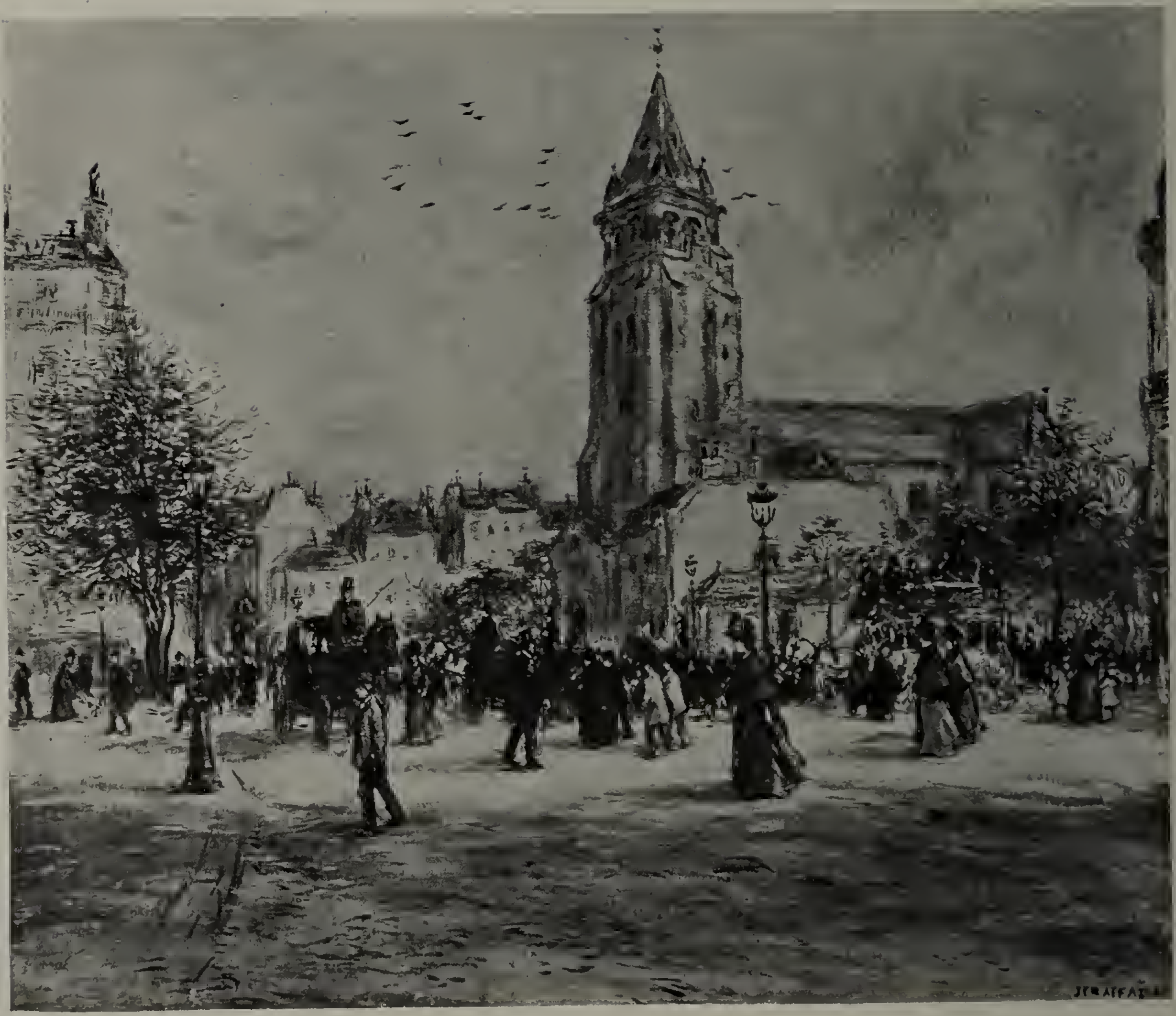

STREET SCENE. *Raffaelli.*

Property of The Metropolitan Museum of Art.

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HOW PHOTOGRAPHERS MAY BE HELPED BY THE STUDY OF PAINTINGS.

BY SIDNEY ALLAN.

IN TWO PARTS—PART II.

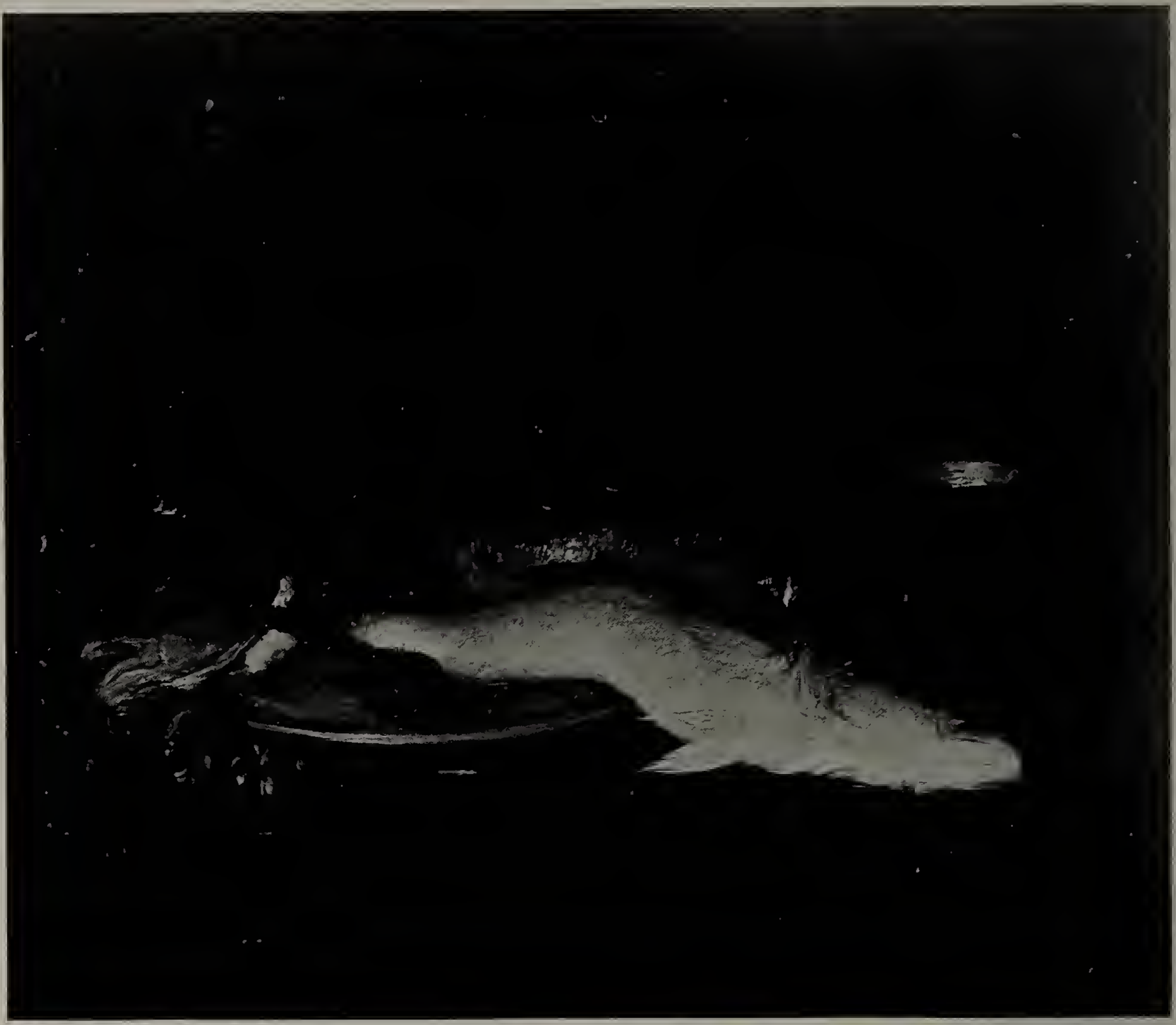
Illustrated by seven subjects reproduced by permission from the collection of paintings at the Metropolitan Museum of Art, New York.

PHOTOGRAPHERS have too long compared their works with those of other photographers instead of comparing them with more ideal possibilities. Of course there are, and always will be photographers who will derive complete satisfaction from taking a group of friends in the backyard, or by flashlight huddled into a corner of a room, or the effects of a local snowstorm, or the next year enlarging upon their ambition perpetuate the oldest house for miles around. Yet there are others—and no doubt many of my readers are among them—who in their choice of subjects are anxious to break away from the general convention and find something more worthy of portrayal than the old favorite—I had almost said hackneyed themes. That would be wrong. There are really no hackneyed themes. It is the way a thing is done that counts. The simplest subject can be rendered beautiful by some novel and individual treatment.

My contention therefore, is that the apparent lack of ideas in amateur photography is largely the inability to find the right way of expressing what is vaguely in one's mind. This knowledge can not be obtained through the photographic representations so generally circulated, but solely through the study of masterpieces of painting. The list cannot be too large, or the knowledge too intimate.

In my last article I selected figure subjects for the illustration of my arguments. In this article, I will discuss still lifes, landscapes, and various other subjects.

The composition of a still life as far as material is concerned, should offer no difficulty. There is something of interest which would lend itself to one arrangement or other in every house, but a good still life is just as scarce as a good example of any other class of



STILL LIFE. Property of The Metropolitan Museum of Art. *Chase.*

pictures. For some amateurs the subject does not seem to be sufficiently ambitious. This is an error. A still life combines all the principal elements of composition, and lends itself better to arrangement and re-arrangement than any other subject. Every home contains a table and tablecloth, and fruit can be brought in from the garden or be purchased around the corner, and that is all the material necessary for the making of a good picture, as we can see in Emilie Preyer's print. Nothing simpler could be imagined, and yet every detail to the dew drops on the grapes shows infinite care. Every photographer should be able to make an equally satisfactory composition. As soon as you are sure of your methods of delivery, you will find that there is no better object lesson than the occasional arrangement of a still life.

The Preyer picture is a gem of miniature painting. It shows every detail in the ordinary clear realistic manner which the painters term "photographic." The Chase "Still Life" is a bolder experiment. It has more breadth of treatment, and a finer feeling for line, but the principal difference is in the arrangement of light and shade. The Preyer still life gives us an exact representation as the object may look in any room under ordinary light conditions, while the Chase still life conveys a momentary impression, ·just a gleam of semi-darkness, accentuating the important point of the picture.

In landscape photography, a greater

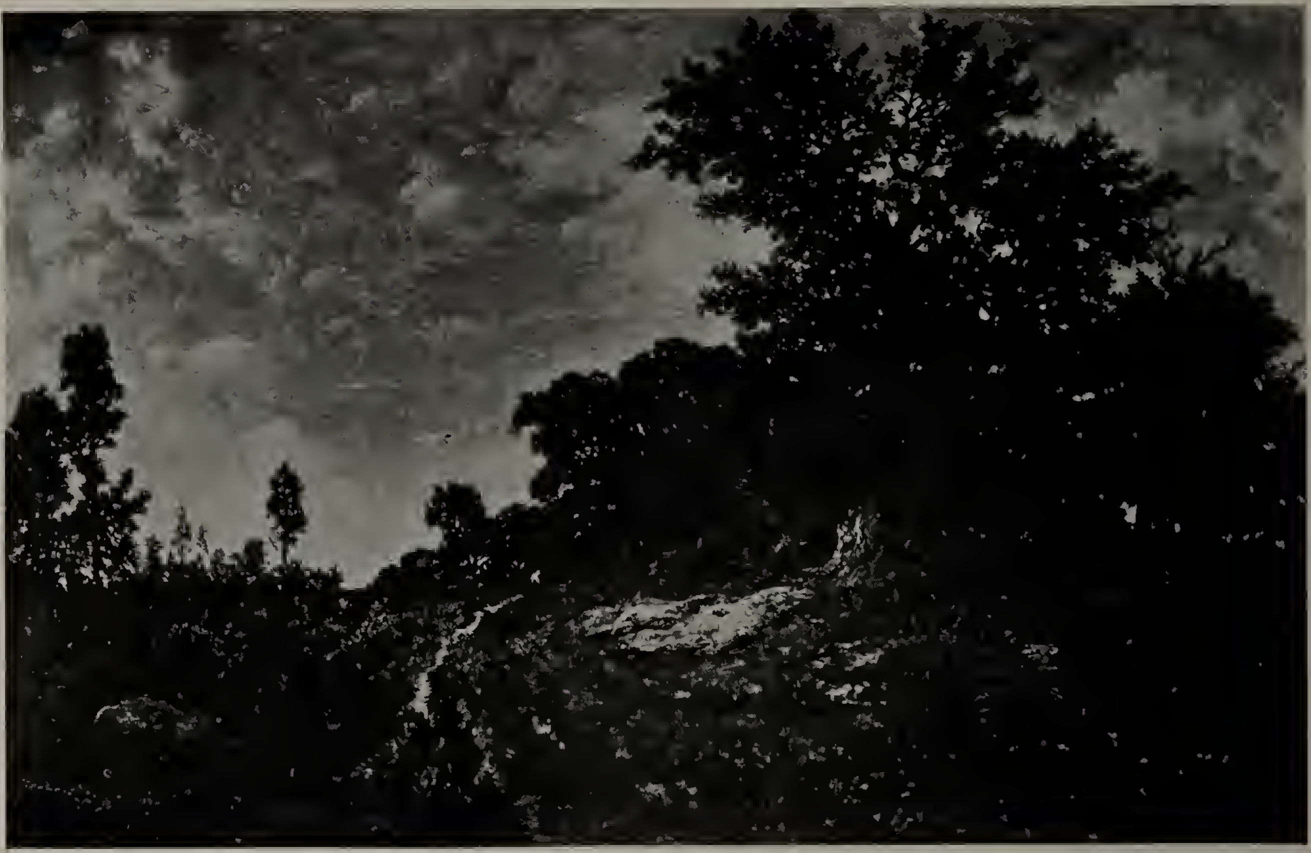
variety of subject is noticeable. Nature, wherever one goes, offers such an abundance of aspects that a variety of themes ought to be the logical conveyance. If this is not the case at times, it is solely due to tradition. Timid people prefer subjects that have been taken before. They do not dare to strike out for themselves. A study of the landscapes of Claude Lorraine, Ruysdael, Constable, Corot, etc., would give them the necessary confidence. It will make them familiar with the shapes and relative positions of tree tops, clusters of foliage, rocks, etc. But the principal thing in a landscape is after all the character and mood it conveys. If the critic can not find any such character in a scene it is a failure The peace of evening, the silence of the forest, the fresh brightness of spring, the grandeur of mountain scenery, the sturdy vigor of an old oak, the mysterious light of early dawn, and the vastness and everlasting motion of the sea—these are the things the picture maker ought to show in endless varieties.

The "Landscape" of Ruysdael shows a trifle too much. It is panoramic as most of the older landscapes were, but it is a splendid composition. Study the position the principal masses hold within the frame. Then look at the relation of the principal lines and masses as regards size, position, and direction, mutual support, and opposition. The "Edge of the Woods," by Rousseau appeals more to our modern mind. Sorry to say the profusion of detail is lost in the reproduction. It is as you will notice a similar theme as the Ruysdael picture, but how much simpler in treatment. It has been

Emilie Preyer.

STILL LIFE. Preyer.

Property of The Metropolitan Museum of Art.



THE EDGE OF THE WOODS. *Rousseau.*

Property of The Metropolitan Museum of Art.

reduced to two large masses, a dark and a light one, divided simply by the line of an interesting silhouette.

Both pictures suggest a distinct atmosphere, and this is more important than all the items of technique upon which most photographers bestow their first and principal consideration. As Mr. Herzog claims the subject of a picture should be so interesting that the poorest print would convey its inner and deeper meaning, and it is in this that the individuality of the photographer can be shown to the best advantage; the development, printing, and mounting, important as they are, are, after all, minor considerations, at least to the general public, and I am sure as Mr. Snowden Ward has said, that the poorest technician will find some way to express his thought when he has any clear thought to express.

Street scenes, in my opinion, are always a pleasant task. But one would have to get away from the bald representation of facts, as Raffaelli has done. One must be inspired by the vivacity of the scene, the picturesque motion of vehicles, and pedestrians, the particular character of the place and architecture of the buildings. Raffaelli has a clear conception of every scene he paints. He tries to imbue each one with a certain emotion, of gaiety, of mystery, or vague melancholy sadness. Only then a street scene will gain in pictorial significance. An ordinary beautiful sight hardly ever makes a good picture, as most photographers who have attempted to depict Niagara Falls have realized.

The "Coast Scene," by Courbet, is the only marine subject at the Metropolitan Museum which was available for reproduction. It is an excellent painting, but I think one could easily improve upon the composition. The merit of the painting lies largely in its textural treatment. The placing of the boat is rather awkward, it is too large for the rest of the space, and the composition no doubt would be improved if the shape of the canvas were more oblong.

An excellent composition is the "Spring," by Mauve (see cover), representing a sheep pasture. One fully realizes its beauty only when one recalls the average cattle picture, the traditional group of cows under a tree near a fence which has been painted for more than a century. Mauve found something to say and said it simply. That is his merit. Nothing simpler and more effective could be imagined than the simple line of the horizon, the elliptical arrangement of the sheep broken by the dark figure of the shepherd. The monotony of the sky and field, two large planes (that would cause trouble in most compositions) is overcome by the vertical repetition of tree tops on the right side.

I can only say to every aspiring amateur, look out for that kind of picture. No matter how poor the reproduction may be, cut it out from a magazine or even from a newspaper, hang it up in your workroom, get thoroughly familiar with it. It will pay you for your trouble. It is no waste of time. It will contribute directly to your store of knowledge. It will sharpen your judgment, your sense of discrimination; you will learn to know unconsciously what to select and what to leave out.

A photographer has to rely on his powers of intuition even more than the painter. The painter has ample time to improve upon his original conception.

LANDSCAPE. *Ruysdael.*

Property of The Metropolitan Museum of Art.

COAST SCENE. *Courbet.*

Property of The Metropolitan Museum of Art.

He can weigh and turn over in his mind every detail of his composition, and gradually build up a harmonious whole. The photographer has but little time for construction. He has to rely on what he knows when he takes a picture. Of course he has the same opportunity to get acquainted with his subject as the painter has, but while he is actually at work, his judgment has to be of almost instantaneous precision, and for that reason, he ought to have a thorough knowledge of art work, so that he can draw upon it whenever he is in need of advice. It alone can render his expression more facile. It will particularly prove helpful in taking a scene in motion and in posing or draping a figure. You should always know what you are doing by intuition, unconsciously, as it were.

But do not let the study of paintings induce you to become mere copyists. Imitation will never develop a man's individuality. Utilize whatever you find profitable, but make it your own. Without individual observation, your work will lack all superior charm and never gain recognition. A good photograph may be occasionally produced by accident, but a series of successes is never made by chance.

EVENING AMUSEMENTS WITH THE CAMERA.

Making Lantern Slides.

BY W. I. LINCOLN ADAMS.

AS the autumn days grow shorter and the evenings correspondingly lengthen, the amateur photographer may find a good deal of pleasure in looking over the collection of negatives, on film or glass, which he garnered on many happy days spent afield during the past summer.

He has probably made more or less hasty prints or proofs from most of them, as they were developed (usually by the local professional) and these have been given, or sent away, to friends, as souvenirs of pleasant occasions enjoyed together. Possibly a practically complete set of the prints has been preserved for the photographer's own album; but, beyond this, the negatives of the average amateur are not used and soon become things of the past and are lost or forgotten.

Now this seems a pity, when so much real pleasure, and often valuable instruction as well, may be had by preserving a permanent record from even the casual snapshots of an amateur's camera. And the most satisfactory way of preserving and exhibiting the work of one's camera is by means of the lantern slide.

There are various methods of making lantern slides, and, of course, the professional is ever ready, (for a consideration), to make them for you, as he probably developes most of your negatives and makes your prints, though by so doing he robs you of most of the pleasure in photography. But don't let him make your lantern slides, for it is fascinating work, which any amateur, with very little or no apparatus, can readily do, and it is, moreover, just the kind of work for the long evenings of autumn and winter.

First let me describe the simplest method of making direct lantern slides from your negatives, "by contact," as they say, without the intervention of any apparatus, except a deep printing frame, or even a copying lens. In fact, you may even dispense with the printing frame, if you wish, fastening your lantern plate to the negative by means of cleats, purchased or improvised. The lantern plates may be purchased from the dealer who supplies you with your regular plates or films, and there are several good brands on the market.

The "exposure" may be made in front of an ordinary evening lamp, gas, or electric light; but a petroleum oil light is preferable, as it is slower in operation, and thus less likely to make over-exposures. The beginner is quite likely to make some mistakes at first, but he will learn by experience in this work as in others, and he will soon be able to judge the proper time of exposure, by noticing the density of his negative, the strength of his radiant, and the distance from it of his frame. It must be remembered that the intensity of light varies inversely as the square of the distance from radiant to recipient. Thus if the proper exposure be ten seconds, when the slide plate is held twelve inches from light, the corresponding exposure at eighteen inches will be: $12^2 : 18^2 :: 10 : 23$ seconds. Exposures will vary from a few seconds to two or three minutes.

The development of a lantern slide does not differ greatly from that of a glass negative, except that a developer, different from the usual one will be found to give the best results. I prefer the old ferrous-oxalate developer for lantern slides, myself, because it gives clear whites and opaque blacks which are very desirable in lantern slides. The formula for preparing this developer is as follows:

A.—Iron protosulphate, 1 part, by weight; water, 4 parts; sulphuric acid, 1 dram to each pint of the above.

B.—Potassium oxalate, 1 part; water, 3 parts.

C.—Potassium bromide, ½ ounce; water, to make 10 fluid ounces.

The developer is composed by pouring one part of "A" into five parts of "B," and to each ounce of this mixture add ten miniums of "C." This developer will be put up for you by the local chemist in case you do not care to bother with so many chemicals, or its equivalent can usually be purchased ready prepared of the dealer.

"Fixing" is accomplished in the usual manner; but the fixing bath must not be acid and should be kept very clean and clear. Let the slide remain in it for ten minutes. The fixing bath is composed of: Sodium hyposulphite, 1 part; water, 6 parts.

Then, after a very thorough washing of the slide, put it in a clearing bath made up as follows:

In a large bottle of water mix some alum and citric acid; take four ounces of this solution, without stirring, and add to it one dram of hydrochloric acid. Pour this solution on and off the slide many times, and it will remove any scum or discoloration.

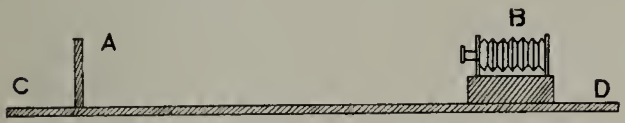
The slide is now rinsed off and set up in a rack to dry, when it is ready to be mounted. To accomplish this a cutout or "mask" of black needle paper, which can easily be made the size and shape of opening desired, is used in connection with a plain and thin "cover" glass, and the two plates are bound together by narrow strips of gummed paper, much as passe-partouts are bound. The finished slide is now ready for projection on the screen by means of a "magic lantern," so-called, or a stereopticon.

By contact, lantern slides can only be made, of course, from negatives at least as large as the lantern plate (3¼ x 4 inches in dimensions). If the negative be larger than that the lantern plate may be placed over the center of the negative, or over some other part of it which seems most interesting and picturesque, and the positive copy thus be made, by contact the same as before described.

If your negative is larger, or the part of it which you wish to reproduce in your lantern slide is larger than the slide plate, it is necessary to "reduce" the size to the required dimensions. The machines for this operation are almost as simple as those for contact-printing. A camera known as an "Enlarging, Reducing, and Copying Camera," is usually employed, and as its name implies can enlarge from a smaller negative to a larger positive, or copy the same size, as well as reduce from larger to smaller dimensions. Such a camera is to be found in all well equipped camera clubs, and if you happen to be a member of such a club you can use the apparatus there, as well as the darkroom and other club facilities, much to your own convenience and advantage.

But if you do not belong to any photographic organization of the kind, and do not care to purchase additional apparatus for this special purpose, I will describe for you a simple arrangement, and an apparatus which any carpenter can easily construct or which you can readily make for yourself. The arrangement consist in placing on the ledge of a window having no trees or other objects within many yards outside, the negative to be reduced, properly secured. and a camera on a stand is then brought up, squared and focused, and the lantern plate is exposed in the camera, using its lens as the reducing objective.

But if you have negatives of different sizes to be reduced, or wish to reduce, now one part and now another, there is a little trouble about the centering and squaring so often, and the simple apparatus which I referred to will be found a great convenience. It is as shown in the following crude diagram:



"A" is a framework carrying the negative to be reduced, "B" is a little camera of the simplest construction, fitted with a rack and pinion for focusing, and having a front which carries a lens traversing in both directions. If you intend to include on your lantern slide the whole of the negative, there is no need for traverses; and the traverse can be effected equally well on the baseboard "C-D." The negative frame can advance and recede in any convenient way along C-D, as between runners or in a longitudinal slot. But the negative in "A" and the slide plate in "B" must always be parallel. The amount of the reduction is regulated by the distance from A to B, the focus of the lens being adjusted by the focusing arrangement of B. It is not absolutely essential, but it is certainly advisable to prevent light from intervening between the negative and the lens, except such light as passes through the lens. Between A and B, therefore, it is a good plan to stretch an opaque cloth, supported, if necessary by light standards. Exposure is made in the usual way by removing the slide in front of the lantern plate, and development, fixing and clearing is proceeded with as described before.

We have now briefly described perhaps the simplest methods for making lantern slides by contact, without special apparatus, and by enlarging, reducing or merely copying the negative in a very simple homemade piece of apparatus. In mounting, "masking," and perhaps coloring, a good deal must be left to the taste of the individual operator. Perhaps a few words of direction, however, in regard to coloring lantern slides may not be amiss.

In the first place it should be understood that a lantern slide to be colored should not be varnished. If, as is most likely, you are using the gelatine plate of commerce, no special preparatory treatment is necessary. Camel's hair brushes, and a few sables, such as are used by miniature painters, will be required; a palette and small easel is a convenience. The colors must be those known as "transparent" and can be purchased of the dealers. Very little color goes a long way on a lantern slide and is put on in mass, as in a "wash" drawing. Very few colors are required, as they can readily be mixed to increase the number of tints. Reds: the various madders, crimson lake, Chinese orange, Yellows: Italian pink, raw sienna, and brown sienna; Prussian blue and ivory black. The colored lantern slide looks much better when projected in an enlarged form on the exhibition screen, than in the original, the transmitted light softening and blending the rather harsh tints as it passes through them.

HALATION: ITS CAUSE AND A MEANS OF PREVENTING IT.

BY WM. H. JOHNSTON.

THE photographer who wishes to avoid halation has a number of means at his disposal, but none of them is of such nature as to render unnecessary a search for improvement. If we choose to make this search, we ought to begin by learning the exact cause of the difficulty; for, knowing this, we shall comprehend more accurately the requirements to be fulfilled by a preventive. To learn the cause, let us consider the path of a ray of light through a sheet of glass and then the course of light affecting a plate.

The first of the above cases is illustrated by figure 1. Suppose the ray impinges at the point A. Part will be reflected along AB. The rest enters the plate of glass, follows the indicated path, and strikes the other surface at G, where it again divides, part being reflected and part escaping along GH, parallel to CA. When the reflected portion reaches J, some follows the line JK, parallel to AB. Evidently the light JK affects the film: but is it strong enough to cause trouble?

To answer this, let us examine a halated image. In a picture including an electric bulb, the light is represented by a spot. Around this there is a ring, sharp on the inner edge and hazy on the outer. Measure the thickness of the plate and the distance from the center of the spot to the inner edge of the halo. Magnify both results till the plate is as thick as that in figure 2; and the halo will begin at L. Does any ray of the halo correspond to CA. Consider ANO. To find its direction before it entered the glass, erect a perpendicular at P, lay off PQ 1.6 times RS. Through Q draw a parallel to PS. If this parallel cuts the circle in a point T, AT will be the direction we have been seeking. But the line

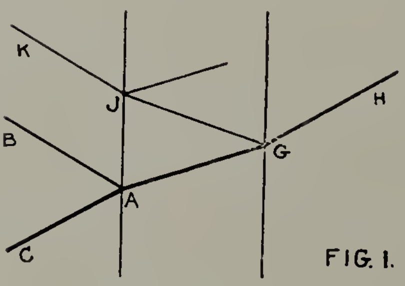
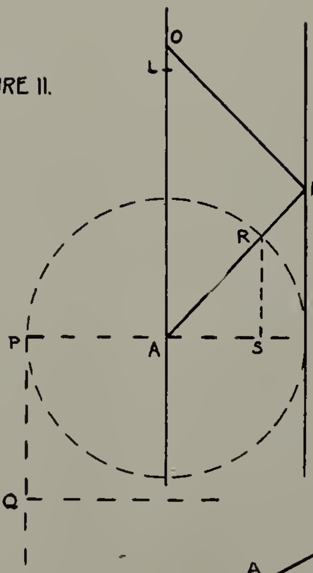


FIG. I.

FIGURE II.



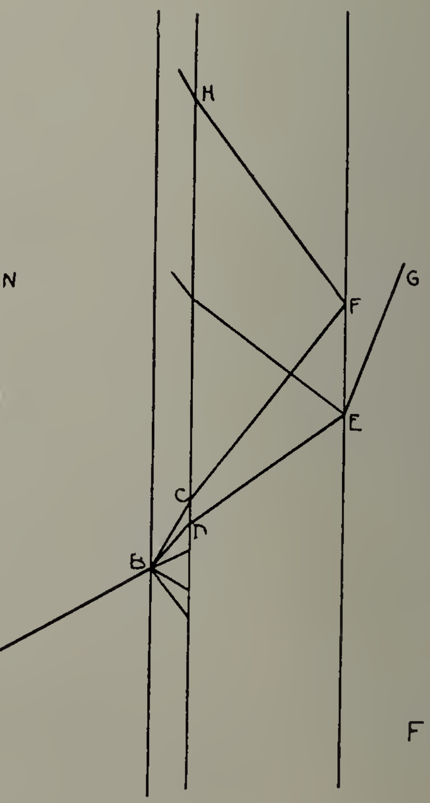


FIG III.

through Q does not cut the circle. Hence, in an uncoated sheet of glass, the rays causing halation would not be present. This suggests that the gelatine has something to do with the spreading of the light; and such is, in fact, the case. Light passing from gelatine to glass is bent less than in going from air to glass. How much less we need not stop to determine for the knowledge would serve no useful purpose in this discussion.

How the halo is produced by this difference in the amount of bending will be made evident by a consideration of figure 3. A beam of light, AB, is scattered by the non-transparent emulsion so that it enters the glass in a great number of rays making various angles with the surface. To fix our ideas, we may limit attention to BD and BC. Being only slightly refracted, these will follow some such paths as DE and CF. Proceeding as in the discussion of figure 2, we find that DE, or most of it, leaves the glass along EG. Of CF, however, none escapes: all is reflected to H, where the greater part reaches the film. This statement may prompt someone to ask how the light can escape from H since it cannot from F, although the angle which it makes with the surface is the same in both cases. The question is answered by recalling that just as light is bent less in going from gelatine to glass than in going from air to glass so it is refracted less in passing from glass to gelatine than in escaping from glass to air. It follows, then, that halation is the result of unequal refraction at the two surfaces of the plate.

This means the case, two means of prevention suggest themselves: make the refraction equal on both sides or eliminate it from one side. The ordinary plate backing works on the latter of the two principles. A substance having the refractive index of glass, in contact with the surface at F, wil enable CF to pass out of the glass unbent. To be effective such a backing must not be transparent or reflection will occur from its rear surface. On the other hand, transparency will not destroy the value of a backing dependent on the first principle. It may be possible, then, to find a preventive which may be left on the plate.

From the preceding it appears that the new field of investigation is likely to produce a more desirable result, that a backing with the refractive index of gelatine may be better than one with the index of glass. Moreover, in this field a remedy is obvious. If we want a substance having a property of gelatine, why not use gelatine? A transparent layer of this could be attached by the manufacturer; and since it would not interfere with printing, it would require no special treatment on the part of the photographer.

Unfortunately, this halation cure will probably have no great following until the plate makers do their part, for there is no little bother in attaching the gelatine. If too little water is added before the melting, the mass will harden before it has spread evenly; if much water is used, the hardening may take hours. For the manufacturers, however, the process is surely as simple as that of double coating, while it ought to be cheaper and more effective.

ADVANCED GETTING RESULTS.

BY C. H. CLAUDY.

IN SIX PARTS—PART IV.

IT is a very strange thing, but not one photographer in ten has a correct conception of what the various movements upon his view camera are for, how to use them, when to use them, and when to let them alone. I have seen workers whose pictures were much admired spend minutes arranging this, that, and theother movement on a landscape where a movement of the tripod would have accomplished the same result in a tenth of the time, and I have watched a professional photographer utterly at a loss in a difficult interior, and with a camera before him with every known movement upon it, at that!

The movements are, usually, as follows. (1) Vertical swinging back, (2) horizontally swinging back, (3) rising front, (4) sliding front, (5) tilting front, (6) swinging front, (7) front focus, (8) back focus, (9) reversible back, (some times a revolving back), (10) extension and shortening cones.

The importance of these varies with the work to be done. For all general use their relative importance is probably expressed in the order—reversible back, vertical swinging back, rising front, back focus—and that is a good order to remember in buying a view camera or, indeed, any camera for use for general purposes.

The reversible back—sometimes a revolving back—is that portion of the camera which holds the ground glass screen, and which takes the plateholder. It if is reversible in any way—it allows a picture to be made either horizontally or vertically. If it is a revolving back it presents the added advantage of being workable without any danger of dropping, and of permitting the picture to be leveled in the camera without leveling the tripod. This is a slovenly way of working, to be sure, but sometimes in very cold weather, every added movement is a burden and the ability to straighten up a picture on the ground glass by touching a button and a push is a blessed thing to have on one's camera.

Not to possess a revolving or a reversible back is to either deny yourself the right of composition on the ground glass to a great extent, make necessary the sacrifice of much of the picture in trimming afterwards, or to be compelled to remove the camera from its tripod and reverse the whole instrument with every change of picture, a nuisance which is hard to bear.

The swing back is used for two purposes, in general. The first and most important, is to preserve a rectinilearity of line in the resulting photograph. If, as is frequently the case, it becomes necessary to the inclusion of all that may be desired in the picture, to tilt the whole camera upwards, the ground glass assumes an angle with the perpendiculars of the subject—as in picturing a house or monument. If the picture be made as it is, the house will appear to lean backward in the resulting picture. If the camera is tilted forwards, upright objects will appear to lean forward. By the use of the vertical swing back the plate and ground glass can be swung parallel to the perpendiculars of the view, and the rectilinearity preserved. It is essential, however, to refocus after the use of the swing back, and as it will be found that with the swing back all the plate cannot be made sharp at once at a large opening, a correctionary focusing must be given, which will about strike the mean between the extremes of the plate, and the lens must then be stopped down enough to bring the image circles of the oblique cones of light within the desired degree of sharpness of the negative.

The other purpose of a swinging back is to adjust focus between foreground and distance in a landscape picture. The foreground of a landscape picture is on the upper half of the ground glass. The background is on the lower half. To get the upper half sharp it is required that the lens be racked out. To get the lower half sharp it is required that the lens be racked in. To split the difference is the usual proceeding, but with a swinging back the focusing can be made almost universal, by tilting the ground glass backwards, so that foreground rays have the longer distance to go from lens to plate and the background rays have the least distance to go.

Needless to say, this use of the swing back produces the very distortion which it avoids when used as a correctionary measure for an angle in the camera. Indeed, when it is possible, without raising the sky line or lowering the elevation of the camera too much, it is better to tilt the camera down and swing the back perpendicular, but this cannot always be done. But, on the other hand, there are no rectinilear lines in the average landscape and the distortion though present cannot be seen.

The use of the side swing, in a camera not provided with the reversible back is, of course, to become a vertical swing when the camera is tilted to its side position. But otherwise it is used as an adjuster of focus, from right to left, in landscape work, and also in copying when it is desired to secure an intentional distortion—as in copying a picture which is already distorted, and so rectifying the distortion or in the use of an ordinary view camera in copying work without a stand, to secure an exact parallelism between copy and plate by visual examination of straight lines in the copy, on the ground glass, and comparison with the straight edges of the ground glass.

An instance may make the former use plainer. In photographing an engine and a train of cars, with the camera near the engine, it will be found difficult to get both ends in focus at the same time with any save a very small stop. But with the side swing, by tilting the back the focus of the two ends can be in a measure equalized and the larger stops used with the greater degree of sharpness. In this case the distortion will simply be to make the angle of view of the train and track a little different from normal, and will not be visible, as a distortion, at all.

The rising and falling front hardly need words of explanation, but a caution only—don't raise the front beyond the image circle of the lens, and expect a sharp picture, without much stopping down, and don't forget that with cameras in which the front board carries the bellows—as most cameras are made now—the raising of the front is very apt to bring the bellows into such a position that a part of it will interfere with the light rays and a small end of the plate will come out blank when developed. Remember to hook up your bellows when using the rising front to its limit and examine the ground glass carefully on the upper end to see that the image is not obstructed.

The sliding front, when not used as a rising front with the camera on its side, is seldom a necessity but often a convenience. When it is used, its effect is the same as the rising front, in moving the image, only instead of raising and lowering it, it moves it from side to side. Its use frequently obviates the necessity of twisting the camera on its screw and a correctionary movement with the lateral swinging back, and it is always a convenience in copying for slight centering movements.

The tilting and swinging fronts are usually the least understood of any of the movements, because to the unobserving their use does not make much of a change in the image. Their purposes can be most easily expressed by saying that they serve to move the circle of sharp definition about the plate at will. Thus, if a lens with an image circle of ten inches, is raised with the rising front until the lower half of a five by seven plate shows a distinct falling off in the light, the image circle—the sharp portion of it— can be thrown downwards to the bottom of the plate by tilting the lens, without changing in any appreciable degree the amount included of the view on the plate. It should be noted, however, that as the plate then becomes a slanting field to the plane of the center of the lens— the plane of the diaphragm—the lens must be stopped down in order to correct, by narrowing the pencil cones of light, the aberrations set up by thus disturbing the natural corrections of the lens as arranged for a flat and parallel image plane.

The use of a front and back focus seem plain without explanation and are, as far as landscape work is concerned—front focus being all that is needed with a short draw and back focus being a great comfort and convenience when using a lens with a long focus and a consequent great extension of the camera.

But for laboratory work—copying, enlarging, and photographs on a large scale, the back focus is essential. In making a landscape, when the front focus is used, the distance between the lens and the subject is altered as the lens is moved. But the proportion between the movement of the lens in focusing and the distance between the lens and the subject is so very small that it makes no difference in the size of the object on the screen. On the contrary, when photographing something near life size, a movement of a small fraction of an inch makes a great difference in the size of the object on the plate, and copying or enlarging or life size photographing with a camera equipped only with a front focus, means that the camera or the copy holder, must be adjusted every time the front focus is used. This makes the operation of focusing, and particularly focusing the object to any set and predetermined size, a matter of great difficulty. With the back focus, it is the plate which is moved to secure the focus, not the lens, and the correct distance from the object of the lens once found, focusing can be done with the back focus without disturbing this distance.

The point may seem a small one to the uninitiated, but to those who know what the two cameras—one with, one without back focus—will do and the trouble the one can cause, these words will strike a ready chord of sympathy. Be guided, therefore, in purchasing a camera, and if you design it for universal use, and expect to do copying or enlarging or life or near-life-size photography, be sure your instrument has back as well as front focus.

Extension and shortening cones are not, properly speaking, movements of the camera at all—they are extra equipment used for special cases. The extension and shortening cone is a pyramidal affair of light wood, made to fit in place of the front board and extending forward to hold the lens, thus increasing the effective draw of the bellows. On some cameras, usually very large ones, it is not possible to close the camera up to such an extent that a three or four inch lens can be used—in which case the cone is reversed, and is extended inwardly into the camera, shortening the distance between lens and plate. The former use, of course, is the most common.

But there is another purpose for the inwardly extending cone besides that of shortening the space between lens and plate to admit a small focus lens to a large camera, and that is the protection of the lens from extraneous light. In some forms of photography, it is essential to work with extremely brilliant illumination, very close to the object—either sunlight or electric arcs, or Welsbach lights, placed close to the object. An extension cone reversed and shielding the lens from direct rays, is often a very convenient piece of apparatus for this purpose.

The extension cone is an effective and inexpensive method of making a camera with too short a draw for copying work, sufficient in size for such photographs—and, where copying is only an occasional thing, the use of an extension cone and a short draw camera may be preferable to the purchase of a long draw instrument.

No user of a camera has a right to consider himself a graduate to the expert class, until he thoroughly understands and can use all the movements of the most elaborate camera—whether his own be equipped with them or not. The familiarity with such apparatus and the ability to diagnose a difficult photographic situation and work it out with the camera movements is of the greatest possible value in all kinds of photography—hence this paper, more a description of what exists and should be understood, than a manual of instruction.

MONTHLY FOREIGN DIGEST.

TRANSLATED BY HENRY F. RAESS.

Submarine Photography.

Peau, an engineer has been making submarine photographs for the past twelve years. In a paper which he read before a Belgian photographic club, he gave a short history of this kind of photography. Bauer in 1866 used a submarine boat called the "Sea Devil," through the windows at the sides he made his pictures using a powerful lamp with reflector. In 1893 Boutan used a photographic diving apparatus. When working in shallow depths the objects were illuminated from above the surface of the water, but at greater depths magnesium burning in oxygen was used. Peau's pictures are remarkably sharp with good details. He worked at Havre the water of which is, except near the surface, very muddy. The camera is contained in a sheet steel cylinder 50 c.m. (20 in.) long and 26 c.m. (10½ in.) in diameter. The front is protected by a glass plate. A tube runs through the rear. This is used for focusing and changing plates. The apparatus can be turned in any direction. It weighs two kilos (about four pounds). When in the water it is held down by additional weights of 10-20 kilos (20-40 pounds). The apparatus is painted as near the color of the water as possible, so as not to arouse the inquisitiveness of the fishes. As everything is usually in motion, instantaneous exposures have to be made. Only the foreground is photographed, the distance appearing as an opaque veil. light is furnished by flashlights in a thick glass globe with a tube reaching to the surface. The shutter and flash work simultaneously.

To photograph crustaceans *i.e.* crabs, lobsters, etc., bait is used to attract them. Polyps and medusas are the most difficult to photograph. Interesting are the sunken objects which soon are so covered with a crust of shell fish as to become almost unrecognizable.—*Photographisches Wochenblatt,* Vol. 34, No. 18, May, '08.

Hydraulic Shutter Release, by Dr. F. Stolze.

Rubber tubes and bulbs become hard and brittle in time. The new metallic or "antinous" release consisting of a spiral spring has none of these disadvantages, but they can not be used very well if longer than about 60 c.m. (24 in.) as the friction of the spiral against its case, makes it necessary to use considerable force. A simple improvement in pneumatic releases devised by the author consists in filling the rubber tube and bulb with water containing 20% of glycerine. The increase in weight is very small and as the force is more effectively applied than with air, a smaller bulb can be used. This mixture also tends to preserve the rubber so that the bulb and tube remain in a soft condition for years. —*Photo Chronik,* page 563, 1907, *Photographische Industrie,* No. 47, Nov., 1907.

Strong Carbon Prints from Weak Negatives.

The prints are placed in a 1% ferric chloride solution until thoroughly saturated. They are then rinsed, and placed in gallic acid solution 1/200. This treatment intensifies the print.—*Apollo,* Vol. 14, No. 314, July, '08.

Photographing the Interior of the Human Eye by Dr. F. Dimmer.

Ever since the invention of the ophthalmoscope by Helmholtz in 1851, occulists have endeavored to photograph the retina. At first only eyes of animals were experimented with, and Noyes an American obtained some results with these in 1862. But the first successful pictures of the human retina were made in Buffalo by L. Howe in 1888. Many others followed rapidly and made improvements. The great difficulty has been to illuminate the interior, and to prevent reflections. One method was to use one-half of the eye to illuminate the other half for photographing. This cut down the field of view very much. Another method was to place the camera in front of the eye, and use flashlights. The trouble here is with reflections, but it gives a large field. The author began his work in this line in 1899 and his present apparatus, which was made by Zeiss, is the best which has been evolved as yet. The illumination is furnished by an arc light using 30 amperes and a train of lenses. The camera is a sort of reflecting type, permitting a view of the image up to the moment of exposure, but instead of using a shutter, a powerful beam of light is suddenly thrown into the eye which has previously been treated with homatropin to dilate the pupil. The exposure is about 1/20 sec. with orthochromatic plates. The image on the plates measures 36 m.m. (1½ in.) this is about four times larger than the natural size of the retina.—*Photographische Mitteilungen,* Vol. 45, No. 7, April, 1908.

X-Rays in Pearl Fishing.

As so few shells contain pearls, a great many have to be opened in order to find them. John Salomon, an engineer, found that X-ray pictures could be made of the shell contents and if any pearls were present, these would show. This method of examining the shells can be conducted very rapidly. Shells containing no pearls are replaced in the water, those having small or immature pearls are placed in a "hospital" for further growth.—*Die Umschau,* Vol 12, No. 31, Aug., 1908.

Avoiding Yellow Stains with Mercuric Chloride Intensifier.

Namias investigated the causes of the yellow stains in intensifying with mercuric chloride. He found that traces of mercury remain in the film after bleaching and washing the plate, in the form of mercurous salts which are not soluble in water, and combining with the blackening agents form yellow compounds. To avoid this trouble, he finds the best method of procedure is as follows: The well fixed and washed plate is immersed in a mercuric chloride solution containing 2% of sodium chloride, and 1% hydrochloric acid; the plate is then placed in a 1% nitric acid solution for ten minutes and then carefully washed before placing in the blackening bath.—*La Photographie des Couleurs,* No. 6, June, 1908.

Reducing Over-Printed Blue Prints

The washed and dried blue prints are soaked in water, they are then placed in a solution of 50.0 gms. (1 2/3 ozs.) of sodium carbonate in 1 litre (33 ozs.) of water. The dish should be rocked until the required reduction has almost been reached, as the action continues while washing the prints to remove the reducing solution. Five minutes washing is sufficient. They are then allowed to dry. —*Apollo,* Vol. 14, No. 309, May, 1908.

Slight Intensification of Negatives.

A negative may often be very much improved by slightly adding to its density. The usual methods do not permit of a sufficient control and the plates become not only very dense but often very contrasty. The following method is said not to possess these disadvantages. The negative is placed in a mixture of equal parts of water and ammonium hydroxide. The length of time that the plate remains in this solution will determine the final density. The plate is then washed for a short time and then placed in a solution of 1.0 gm. (15 grains) of cadmium bromide in 1 litre (33 ozs.) of water. In this solution the image takes on a fine black color and at the same time intensifies.—Apollo, Vol. 14, No. 312, June, 1908.

Editorial Notes

OUR announcement of a change in price has met with most gratifying results. Any publisher hesitates long before making an announcement of an increase in the subscription price of his publication. With us, as with all publishers, the cost of all material entering into the make-up of a periodical has sharply advanced. Our advertisers have been willing to assist us in carrying part of this added burden, but could not be expected to shoulder all of it, so in order to exist without lessening the quality of the magazine, the price had to be increased.

In our announcement we stated that up to October first subscriptions at the old rate for any period would be received. Renewals and new subscriptions, ranging from one to five years have literally poured in, and many of them accompanied by most flattering appreciation of the work we are attempting to carry on.

In editing and publishing a magazine for the majority of photographers, we realize that we cannot please everyone, that often we must go contrary to some one's honest belief and opinion.

We have invited and have received many criticisms and suggestions for improvement—all such as we deem feasible and within our power will be given a trial. There is more in the making of a magazine than the profit that may accrue from its successful handling. Of course we all like to make money; to have our business endeavors show a profit, if only to those who are on the right track, but deeper than this is the feeling of responsibility in the carrying out of the educational part of the work, to make better photographers, to interest and to keep them interested in their work, to aid them in avoiding and overcoming all difficulities that may arise. Therein lies the true value of the work. We have made errors, some of them costly to us, and as they have developed, we have acknowledged them, and have put forth every effort to rectify them and to profit by our experience.

To know just where we stand, we must have co-operation from our readers, and from our advertisers. How many of our readers stop to think that it is the advertiser that makes the modern magazine possible; that the subscription price you individually pay would not cover the cost of paper stock and printing. As it is the advertiser who assists you so materially, is it not simple justice that you read his announcement in each issue, and that you purchase his wares in preference to the non-advertised ones? It most certainly is.

Let us explode one bubble right here, and that it is the argument that a non-advertised article can be sold cheaper because it does not have to carry the extra burden of advertising expense. Successful advertising *saves* on the cost of production, rather than increases it. Why? Let us take a familiar example, a watch. When the output of watches was limited, each part had to be made by hand, a slow and laborious process, and should a part wear out, the new part to replace it had to be made by hand, as owing to the slight inaccuracies in handwork, interchangeable parts could not be had—and the price was correspondingly high. To-day you can buy a watch that will keep good time for a dollar. Advertising made this possible, with a market for a thousand watches a day. It paid to invent machinery, to turn out parts by the thousand, all exactly alike and interchangeable. It made it possible to turn out cases for these movements by the thousand, and to devise machinery to stamp them out, each one perfect, at a far less cost than the old time fitting together of parts would have cost. Advertising reduces the cost of the consumer because if rightly done the market is vastly increased. So much for the advertising section of the publication.

Now as to suggestions for the general betterment. We will continue the competitions with cash awards, the verdict has been unanimous in their favor. We will analyze and criticise the winning prints. We will establish a separate department for the criticism of other prints, but we will not criticise more than three prints from any one person in each issue. We will endeavor to inform you of all new things whether the manufacturers advertise with us or not.

One little point; it helps us with the advertisers if you will reply to their advertisements stating that you saw their advedtisement in the PHOTOGRAPHIC TIMES. They feel then that the TIMES is reaching the class of people they want to reach, and what helps us helps you. We want you to consider THE PHOTOGRAPHIC TIMES as *your* publication. We want to hear from you with suggestions and criticisms. We want you to receive your money's worth and a little bit more.

FINDING THE FOCUS OF A LENS.

FOR the systematizing of work certain rules and formulæ are very convenient. As an example, it is a great advantage when copying to be able to calculate the distances between the original and the lens and between the lens and the ground glass. To do this it is necessary to know the focal length of the lens employed, and though in many cases that information may be given by the maker—engraved on the lens mount—there are many excellent lenses in everyday use which are not so marked. There are three methods of measuring focal length, varying in simplicity and in degree of accuracy, which it is proposed to give, and while the third is the most scientific and gives accurate results if done carefully, the other two methods will serve if an approximate measurement is sufficient.

BY FOCUSING ON THE DISTANCE.

The focus or more correctly the focal length of the lens is the distance from its optical center to the ground glass when an object at an infinite distance is sharply focused. If the lens is of short focal length, that is, a quarter or half-plate lens of, say, less than 8 inches focus, it will answer every purpose if some object three or four hundred yards away is taken instead of the sun or moon or other infinite distance. To select some such distant church spire or telegraph post and sharply focus it is a simple matter. The question then arises,

WHERE IS THE OPTICAL CENTER?

It is comparatively easy to determine the position of the optical center if the lens is placed on an optical bench, for it is the point upon which, if made a pivot for the lens, it may be turned to the right or left (not revolved as when screwing the lens into its flange) without disturbing the position of the image on the ground glass screen. The lens in a panoramic camera is pivoted exactly above and below its optical center. But as no optical bench is likely to be at hand, some rough indication of the approximate position of the optical center of various lenses may be given. With symmetrical lenses—such as the rapid rectilinear or aplanat, or the symmetrical anastigmats—such optical center may be taken as being at the diaphragm. With doublet lenses which are not symmetrical, such as the convertible lenses in which the two combinations vary in focus, it will probably be near enough if the measurement is made from the diaphragm. The Cooke and the Aldis lenses must be mentioned as lenses whose optical centers are actually in front of the complete lens, so that a measurement from diaphragm to ground glass would give an incorrect result. The focal length of these lenses should be measured by the third method. With single lenses measure from the back surface of the glass, whether such lenses are ordinary landscape lenses or the single components of rectilinears or anastigmats.

WITH A CAMERA OF LONG EXTENSION

at hand, use may be made of the fact that when copying an object the same size, the lens works at double the focal length, and the distance from the ground glass to the optical center is the same as from the optical center to the object being copied Thus, if a lens is screwed to the camera, and the distances are adjusted until the image and the original are the same size, we have two focal lengths from original to lens, and two from lens to ground glass, or four focal lengths in all. If therefore the distance from ground glass to original is carefully measured and divided by 4, we get the focus of the lens. The most convenient way of getting an image the same size as the original, is to cut two strips of white card exactly the same length, say 3 inches or 5 inches, according as to whether the camera is quarter or half plate, pinning up one strip on the copying board, and using the other to measure the size of the image on the ground glass.

THE MOST ACCURATE METHOD,

and at the same time a perfectly simple one, demands the employment of the ordinary camera, a sheet of fairly stout drawing paper, preferably pinned to a drawing board, a good T square or other straight edge, a foot rule marked with inches, a sharp lead pencil, and possibly a pair of compasses, though these are not essential. All the other things are ready to hand in almost every house. If no drawing board is to be got, the top of a kitchen table will answer equally wel, the stout paper being pinned down to that. First of all make two pencil lines on the ground glass screen, the further apart the better, as tending to the minimizing of error in subsequent measurement from an angle. For a quarter plate screen 3½ inches, and for a half plate screen, 5½ inches are suitable distances, and

THE DISTANCE MUST BE EXACTLY MEASURED.

Now open the window so that some clearly defined object two or three hundred yards away may be focused, resting the camera, not on a tripod, but on the drawing board covered with its sheet of paper. The image of some certain definite point must be arranged to come just on one of the pencil lines, and when this has been obtained hold the camera firmly and rule a line on the paper, using the edge of the base board as a straight-edge. Then keeping the camera in about the same position on the board, swing it round, taking care not to move the board itself, so that the image of the same definite point comes on the other pencil mark on the ground glass, and again rule a pencil line along the edge of the base board. If the camera is now removed these two lines will be found to form a V or, if they do not actually meet, they may be produced until they do, using the straight-edge or T square, and being careful to continue them without any deflection, and to use a sharp hard pencil so that the point of intersection may be accurately ascertained. A strip of stiff paper must next be cut exactly the length of the distance between the two pencil marks on the ground glass screen and, first marking a point midway between the two ends, this is moved until it just fits in between the two lines on the sheet of paper, indicating the position where they are 3½ inches or 5½ inches apart as the case may be. Take care that each end of this slip of paper is the same distance from the point of intersection or bottom of the V, and, when this is so, measure carefully from the middle of the edge of the strip to the intersecting point and the distance will be the focal length of the lens. This may sound complicated unless read carefully, step by step. The method is in reality a very simple one, and a handy worker having got his implements together should be able to measure the focal length of any lens of average focus within ten minutes

—*Photographic News.*

WRINKLES.

BY AN OLD STAGER.

On the Photography of Machinery, Engines and Similar Subjects.

ONE of the less usual tasks which the amateur sometimes gets is to photograph an engine or a piece of machinery; and he will find when he comes to undertake it for the first time that it has a whole set of difficulties of its own. I have not had any very extended experience of this work, but I have done some, and what I have done has suggested one or two points which may be useful to others.

THE COLOR OF THE PAINT.

The luxury of machine photography is reached when the maker or owner will go to the length of painting the machine specially in order to have it photographed. He may do so, as, if he is an engineer, he is sure to know that it is a customary course to follow with good or new machines. If he does, and asks what color would be most suitable for the purpose, suggest to him a dull gray—one which will as far as possible dry with a matt and not a shiny surface. Let it also be fairly dark, in order that the bright parts may stand out well against it. If possible, see the apparatus before it is painted, and get it put into the position in which it will be photographed; otherwise the smoothness of the painting is sure to be spoilt in the moving, and it will get finger-marked and soiled. Moreover, the more carefully it has been got ready for the photographer, the more conspicuous will be any soiling it receives.

CHOICE OF POSITION.

This placing of the machine is very important, because many an engineer seems to think that so long as the parts to be shown can be seen they can be photographed. I was once asked to photograph a steam pump about six feet long but found it impossible to get six feet from it, or anything like six feet, except when I got an end view through a doorway, which the designer of the pump would not have at any price. If a position can be selected, see that it is one preferably without light behind the machine or directly above it, as the best effect on the various curved surfaces will be got when the light comes from one side or the other and from a point well in front of the apparatus.

WIPE MARKS.

When the machine is not specially painted, "wipe marks" must be looked for, and removed. By "wipe marks," I mean a kind of smear left by the cleaner's oily waste, which is very visible in a certain aspect. Sometimes they are made to give a kind of pattern all over a flat painted surface, and then there may be no need to avoid them.

A LUMP OF WHITING OR CHALK.

At the last moment, when everything else has been got ready, it is often possible to make some very effective work with chalk, or, better still, whiting. This may be rubbed on details which it is desirable to show, but which are in heavy shadow. It is also very useful in bringing out relief lettering, such as the maker's name, which is often cast on a bed plate. The tops of the letters are rubbed with whiting, then just touched up with a *clean* finger, and the white dust blown off. The lettering will then be much more distinct.

DINNER HOUR OR SUNDAY.

When the machine stands in a workshop, the dinner hour is the only time when it is safe to attempt its photography, and then only if all the running machinery has stopped. The ground or floor of the ordinary engineer's factory is always in such a state of vibration when the machinery is running that the image on the plate is nearly sure to be duplicated. If there is no other opportunity, then Sunday must be selected. I once made several attempts to get a special appliance photographed by means of flashlight at night, as it could not be done in the daytime, but I cannot describe the result as encouraging.

POSING MACHINERY.

When a piece of machinery is being photographed for its owner or designer, it is most important to get him to come and look at it, if it can possibly be arranged, to make quite sure that it is "posed" exactly as he would have it. A tap turned on or turned off, a crank in one position instead of another, may seem quite unimportant to the photographer, but may have some subtle engineering significance which will set the owner quite against the photograph which shows it as it should not be.

LIGHT IN THE DARK PLACES.

A wrinkle which I can thoroughly recommend is to take a supply of newspapers when going to photograph machinery in the shops. When all else is ready, the ground all round and as near the machine as possible may be paved with the sheets of newspaper. It is surprising what an effect this will have in lighting up the darker shadows underneath; it must be seen to be appreciated. If the engine is not to be blocked out, the newspapers must not be carried too near it, but all such work is best blocked right out.

NO FUZZINESS PERMISSIBLE.

After focusing as sharply as possible, a small enough stop should be inserted to make quite sure that every part of the machine is sharp. If there is one class of subject more than another where any fuzziness is to be deprecated, it is in engineering photographs.

PLATE: EXPOSURE AND DEVELOPMENT.

The fastest plate that one is accustomed to will be found the plate to use, for lighting is often very poor. There is another advantage about the fast plate—that it is, generally, less likely to yield a negative that is too hard, and there is less risk of under-exposure. There is no greater fault in a photograph of an engine or of a machine than under-exposure, especially when it is followed by forced development, which makes all the highlights hard and bright. There are always highlights from reflections from bright surfaces, which have a tendency to come out too bright, and full exposure helps to prevent this. It also helps to make the detail, even in the heavy shadows, visible, and the owner of the machine likes to be able to see as much as he can of what knows to be there. Finally, let me point out the necessity of using a backed plate, and the advantage of diluting the developer. These are not wrinkles that apply simply to the photography of machinery, for there are very few occasions when there is not a distinct gain both from the backed plate and from the dilute developer. But their value cannot be rubbed in too often, and there can be no doubt about their advantage.

THE BACKGROUND.

If the engine is to be blocked out, a light background, which may be extemporized from a few sheets of newspaper, if nothing else is handy, will be found very helpful, as it leaves no doubt about the outline of the different parts, often difficult to follow when they come against a dark corner of the workshop, with other details perhaps of a similar appearance, but having nothing to do with the subject of the photograph.

—*Photography.*

FINISHING AND DOCTORING THE NEGATIVE.

BY W. H. NITHSDALE.

A NEGATIVE requiring intensification or reduction before it is printable is the product of bad photography, and no matter what expense, time, and skill are expended in these operations the results are never altogether satisfactory. It is often better to throw the thing away than to worry over and endeavor to improve that which is ruined through accident, carelessness, or incompetence.

The most careful photographer, however, is troubled with blemishes in his negatives, and it is desirable, if excellence of technique is any consideration, that he should have some little knowledge of the use of pencil, knife, and brush. Before attempting doctoring of a more complex nature than spotting, it is advisable to make a print and study its faults carefully. This suggests that our first operation upon the negative should be to clean the glass side. Methylated spirit, soap of the "Monkey Brand" order, or a touch of tap water only, with a towel, will accomplish this.

Sometimes an otherwise excellent negative shows a trace of fog from one corner. Dark slides with aluminium or vulcanite shutters which pull right out are fertile in this defect, particularly when the shutter has been drawn an appreciable time previous to the exposure. A small pad of linen, packed with tightened cotton-wool, is moistened with methylated spirit. Excess of spirit should be squeezed out, and firmly rubbed into the fogged portion of the negative. The friction removes the silver deposit; but one must proceed with extreme care and be very persevering. Any light object, or part of a light object, is amenable to erasure by the methylated spirit pad, but the knife is a quicker and in skilful hands a more efficient instrument. I succeed remarkably well with the sharpened blade of an ordinary penknife, although surgeons' lances are invariably recommended. I scrape lightly with the blade at any convenient angle to the film. A delicate touch is as necessary as a keen edge, and the least carelessness will make a hole in the film.

Retouching is an even finer art than film surgery, but it can be, and often is, carried to excess. It enables us to portray the faces of our friends of sixty as they appeared when twenty. We make them appear ridiculous when we manufacture a baby skin amid whiskers of snow and beneath a shining expanse of bald head. Still, wrinkles must be deleted, noses have to be straightened; and it is imperative that mouths should be respectable in size and appearance. The prescription on the retouching bottle says: "Moisten with a rag and rub the film." I find it more convenient to slightly moisten the tip of my little finger with the medium and gently rub it in. Medium dries quickly; it is soon ready for and will take almost any quality of pencil. There are as many fancy strokes in retouching as in figure skating, but it matters little in the long run whether one adopts the curlies, the criss-cross, or the stage, so long as the lead is laid properly and in correct position, although an expert prefers a particular stroke for particular work.

I have given much thought to the why and wherefore of spots, but am not satisfied except with one conclusion, and that is, try as we will we shall have spots. If I dust my slides, my plates, and my camera never so carefully, I can rest assured of a splendid crop of spots. On the other hand, if I dust nothing I may have none. In times past I dusted plates religiously with camel-hair brushes and with velvet. I always had spots then, minute ones that were unrecognizable at times in small prints, but they were spots for all that. Spotting, whether with brush or pencil, is a tedious and troublesome business. I prefer a soft pencil, and just touch the spot without any preparation with medium, for I find that with brush and color or Indian ink, unless it is a very big spot, even a 00 sable brush will add a halo to the spot. Minute black spots on the negative are best left alone; a touch with the brush to the finished print will suffice if the white spot there should show at all prominently. Large black spots call for treatment with the knife. I may be wrong, but I attribute these latter to faults in the plates. I meet with them very seldom.

Matt varnish is useful for negatives of a ghostly character. It is applied much as one varnishes, but to the glass side of the negative. Drying is accelerated by heat—a few seconds before the kitchen fire, and the result presents an appearance resembling ground glass. The surface takes pencil and stump readily, and in places where its intensifying properties are not desired the dried varnish is readily removed with the knife. Matt varnish is a favorite ally of the man who revels in working on his negative.

I place the bottle containing the varnish in a basin of hot water, heat the negative before the kitchen range until it feels uncomfortably hot to the back of the hand, and then, over the scullery sink, pour on the varnish. But here let me caution you regarding the water adhering to the outside of the bottle, for a drop of it on the plate and among your varnish will makes havoc with, if it does not completely ruin your negative. Single-handled you cannot wipe the bottle; you are handicapped with the hot negative in your left hand. I have a towel bunched and lying handy. I drop the bottle lightly on it immediately after removing from the basin. The towel does as much as is necessary automatically. Pour a big pool—be generous—in the middle of the negative, blowing off any accumulating dust. Pour until the varnish almost reaches the sides of the negative; tilt alternately to each end in order to cover the surface of the film; and run off the excess varnish from one corner into another bottle which you have placed conveniently, and in the neck of which you have inserted a funnel. The extra bottle and the funnel will save you a lot of varnish you would otherwise waste. Hang the varnished negative to dry with the "running-off" corner downwards; with a finger-tip you can remove the drop which will accumulate shortly.

Methylated spirit will remove varnish if you have made a mess of the operation; it will at the same time remove your retouching. I should have saved myself a lot of varnish and some good negatives if I had practised with a gum or syrup of the consistency of varnish on waste plates.

Permit the negative to dry thoroughly before attempting *any* tinkering with the film I have tried rubbing down a wet film. The experiment was not successful.—*Photography.*

Notes and Extracts

Packing Exposed Plates.—The system of packing exposed plates I advocate is one taught me by one of our leading firms of publishers. When photographing in the East I packed and sent away about 5,000 exposed and undeveloped plates, and although their destination was nearly a fortnight's journey from the place of packing, I never heard of one plate being broken.

The only real common-sense method is to place nothing whatever between the plates and to pack them film to film.

Experience has shown that packed in this manner and wedged tightly in the original boxes, plates may be sent from one end of the world to the other. But the chief advantage lies in the fact that the two sensitive surfaces coming into contact, exclude all air from between. In experiments made some years ago it was found that the greater the distance between plates the more quickly they deteriorated. They keep better, just as sensitive paper does, when in close contact or even under pressure.

Paper placed between the films—no matter how pure it may be—will, in time, have an effect upon an undeveloped plate. One amateur I know placed cigarette papers between his, because he thought such papers were the purest he could obtain; but in developing those plates some months afterwards, to his surprise and annoyance, he discovered that when immersed in the developer those parts of the gelatine which had come in contact with the paper, developed much more dense than the surrounding parts of the image.

Beginners frequently make the sad mistake of packing up their unexposed plates with newspaper between them, with the result that negatives appear with the printed matter upon them—transferred from the paper. It has frequently been stated by experts that such markings cannot be removed from the film, and indeed they cannot from a developed plate, but if the letters can be detected before development they can often be removed in the following way: Bathe the plates before development in a two per cent. solution of acetic acid, well wash and then treat with a bath of alcohol. When dry develop as usual.

The late Mr. A. L. Henderson's experiments described at the London and Provincial Photographic Association many years ago may be of interest. Taking an undeveloped plate he pasted on the back a piece of black paper out of which a hole had been cut in the center. A piece of writing-paper was laid at the back of this and the plate carefully kept in the dark for several months. When the plate was developed, he found a black patch on the plate corresponding with the cut-out hole. As the paper did not come in contact with the film the action could not be a chemical one, but the phenomenon was caused by a light effect; that is to say, the paper possessed luminous or phosphorescent properties invisible to the eye. At the same time this light action was, with the dry plate, a cumulative one, and after some months this feeble effect was sufficient to upset the equilibrium of the silver haloids and cause a development to take place. From this it will be seen that in choosing a suitable material for packing plates other causes than chemical impurities must be investigated.

Another point to be borne in mind is that pressure will exert an influence upon the silver haloids. If an exposed plate be placed in an envelope and details be written on the envelope, care must be taken that the writing is not on the side resting upon the film, or a reproduction of the writing will develop up on the film with the photographic image.

When opening a box of plates one end of the wrapping should be cut off, and the box be slid out of the wrapper; keep the wrapper as it will be of use in re-packing. When the plates are taken from the sheaths or dark slides after exposure, lay the two gelatine surfaces face to face, taking care that there is no foreign matter between them. Continue to place them in pairs, and when a dozen or a dozen-and-a-half plates are ready, wrap the heap in brown paper and press tightly into the original box, so as to prevent their moving about, and the delicate films from being injured by abrasion. Put on the lid and slide the box into its original wrapping. The box may then be tied up, or the end of the wrapping may be fastened with gummed paper.

Plates packed in this manner may be safely carried in one's baggage from China to Peru without fear of breakage, or may be sent by post if the box be packed in light wood.

Stamps should never be placed on the box, but on tie-on labels, as plates are apt to get broken in the process of cancellation.

P. R. Salmon, F.R.S.P.
—*Photo Scraps.*

* * *

Ortol Developer.—Equal parts of the two following solutions are mixed together for use:

(1.)

Potassium metabisulphite	35 grains
Ortol	70 grains
Water	10 ounces

(2.)

Sodium carbonate (crystals)	1 ounce
Sodium sulphite (crystals)	1 ounce
Potassium bromide	10 grains
Water	10 ounces

* * *

Ink for Writing on Negatives.—If the following ink is used to write on the film of a negative, and the negative is then immersed in an ordinary fixing solution, washed and dried, the written letters will be reduced to clear glass, and will print black.

Potassium iodide	100 grains
Water	1 ounce
Iodine	10 grains
Gum arabic	15 grains

* * *

A Yellow Light Filter.—An unexposed plate, preferably a lantern plate, is fixed out in clean hypo, washed, and dried. It is then soaked for two minutes in

Naphthol yellow	5 grains
Water	10 ounces

The plate is then rinsed in water until of the tint desired, dried, and bound up like a lantern slide.

* * *

Schlippe's Salt Intensifier.—After bleaching with mercury in the ordinary way and well washing, the plate is darkened in

Water	1 ounce
Schlippe's salt	15 grains
Liquor ammonia	5 drops

The negative is then washed and dried. The intensification with this formula is very great.

* * *

Substitute for Ground Glass.—A clean piece of plain glass may be substituted for the ground glass focusing screen by pouring over it

White wax	100 grains
Ether	1 ounce

* * *

Medium for Water Colors.—Instead of water, the following medium should be used when P.O.P. prints are to be tinted with water colors:

White of egg	1 ounce
Glycerine	15 minims
Ammonium carbonate	20 grains
Liquor ammonia	15 minims
Water	2 drachms

The white of egg should be well beaten up and allowed to subside, and then the ammonium carbonate, having been dissolved in the water and the glycerine and ammonia added to the solution, is well stirred in. The mixture should be strained through fine cambric or cotton wool.

* * *

Photographing Faded or Burnt Documents.—Burnt documents are perhaps the most difficult things which it falls to the lot of the photographer to deal with. Faded photographs and manuscripts or documents are also unpleasant things to reproduce. But by using the right system the difficulties can be overcome, and in a recent issue of the *Photo Revue,* Dr. Reiss contributes a useful and practical article on the subject.

Age, damp, and a variety of other influences may cause writing to almost disappear, and more especially to become faint yellow. The document or paper can be flattened out by placing it between two large pieces of glass in a big printing or other frame. In order to increase the contrast of the faded writing on the paper, there are three distinct operations, each of which gives additional clearness.

First of all, since yellow rays of light cannot pass through blue glass, the yellowish faded writing will appear almost black if examined through a deep blue screen, and hence, by photographing it with an ordinary plate and employing a deep blue "contrast filter," we shall get a negative in which the writing appears considerably intensified.

This, however, is only one step. The next is to intensify the negative itself, and for this purpose mercury and ammonia will be found good. Reduction and intensification combined may prove even better, as we can reduce the "shadows" (in this case the writing) more proportionately than the "high lights" (the paper). Acid ammonium persulphate is recommended for this purpose by Dr. Reiss, but we should imagine that Howard Farmer's hypo-ferricyanide reducer would prove better, as it will attack the writing in preference to the "background." In either case, mercurial intensification follows.

By this double treatment, *i.e.*, contrast filter and intensification, the very faintest writing will have become fairly legible in the negative. But one further improvement is available in the printing, and that is the use of a very vigorous gaslight paper, with a concentrated developer well restrained with potassium bromide. The results are astonishing, as the writing, which at first it may seem hopeless to try to photograph, will be quite distinct in the print.

Burnt documents are still more difficult to deal with, but they should be very carefully flattened and placed between glass as before, steam being used to render the brittle paper more supple. If the paper is black and the ing gray or brown, a positive result is obtained direct. Slow plates should be used, sufficient but not over exposure being given, and a slow working developer, such as ferrous oxalate, well restrained

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To Make a Vignetting Card.—The follow-lowing sugestion sent by a reader will be found of practical utility for those who desire to make a rough opening in a piece of thin card for vignetting purposes. Thick brown paper may also be used, and any shape opening can be easily made. The card or paper is cut to the outside of the printing frame, and the desired opening is marked on it in pencil. Then get a stout bodkin and perforate the card round the pencil mark, and it will be easy to push out the piece that has been perforated. To complete, paste a piece of tissue over the opening, and fix in position on the printing frame with drawing pins.

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Soft Prints from Hard Negatives.—According to an article by Prof. Namias in the current *Photographisches Wochenblatt,* it is possible to obtain soft and well-modulated prints from hard negatives by treating the latter with potassium permanganate before printing; this compound imparts a brown color to the negatives, and so render the printing qualities less harsh. The following is the formula recommended:

Water	300 c.cm.
Potassium permanganate	1.5 gm.
Acetic acid	2 gm.

The negative is immersed in this solution until sufficiently colored brown, and is then washed and dried. The coloration can be removed, locally or entirely, by means of bisulphate solution, which can be applied with a brush where only local action is desired. It may be assumed that the gradation in the print can be fairly precisely controlled by the length of time in which the negative is allowed to color in the permanganate solution.

A Developer for Ultra-Rapid Plates.—The MM. Guilleminot recommend the following developer for extremely quick plates:

A.—Water	17½ oz.
Sodium sulphite	3½ oz.

Dissolve, and add

Pyrogallic acid	½ oz.
Sulphuric acid	15 drops
B.—Water	17½ oz.
Sodium carbonate	1¾ oz.

For use, take one part each of A and B and one part of water. Add a few drops of 10 per cent. bromide solution as necessary.

Items of Interest

ANLEITUNG ZUR PHOTOGRAPHIE, by G. Pizzighelli, 13th edition, 1908. 255 text illustrations and 27 tables. Published by Wilhelm Knapp, Halle a.s. Germany, price (bound) mk. 4.50.

This splendid work on photography is chiefly for beginners, but even the advanced worker wil find it very useful. It does not mention old processes, but treats only the latest methods in photography, covering lenses, apparatus, papers, plates, and chemicals. Also the new method of photography in natural colors by the autochrome process, both in theory and practice. Besides the text illustrations there are numerous art studies, some full page.

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RECENTLY THE ROYAL PHOTOGRAPHIC SOCIETY in London, opened its 35th annual exhibition, which occurrence always forms one of the important events in English photographic circles. Not only does this exhibition bring every year something new and interesting in the matter of pictures, but also in the various photographic apparatus and lenses. Among the latter, a very interesting historical article, viz.: the 250,000th Double Anastigmat recently completed by the C. P. Goerz Optical Co., of Berlin-Friedenau. It constitutes an eloquent testimonial for the enviable reputation of these instruments and it is not only a matter of congratulation to the Goerz Optical Co., but also to the entire optical industry of Germany, that one-quarter million high grade precision instruments have been placed upon the market.

* * *

NEW YORK, Oct. 28th, 1908.

EDITOR PHOTOGRAPHIC TIMES.

Dear Sir: It would greatly oblige me if you would make mention in your coming number of the PHOTOGRAPHIC TIMES, that my connection with our firm will terminate at the end of this year. I haven't yet decided as to what I shall undertake after that date. Perhaps the notice may reach some one who can make me a suitable proposition.

Thanking you beforehand,

Very truly yours,

L. J. R. HOLST.

* * *

A MILLION HIGH GRADE LENSES.—Even in this day of large things a million still carries with it an idea of magnitude. Who would have believed that so great a number could be truthfully applied to the quantity of high grade lenses made and sold by a single company since the introduction of the Anastigmat in 1893? Yet a million Anastigmats, high grade Portrait lenses, Rapid Universal and Wide Angle Anastigmat lenses have been constructed and sold by the Bausch & Lomb Optical Co., of Rochester, N. Y., since the above date. The million mark was passed in September.

Furthermore since 1882 over fifteen million simple lenses for photographic purposes have been made by them, and an equally astonishing fact is that they have sold one million one hundred thousand photographic shutters since their invention—only a comparatively short time ago.

These facts carry with them some idea of the popularity of the photographic products of the Bausch & Lomb Optical Co. This popularity is based on their recognized merit and the eminently satisfactory service which these products give in all kinds of photographic work.

* * *

THE PHOTOGRAPHER'S HANDBOOK.—By Chas. Harrison and John C. Douglas. Published by John Lane Co., New York. Price, $1.00 net.

It is manifestly impossible in the limited scope of one hundred and forty-six pages to cover in any sense adequately the field of photography. And yet in a "handbook" not much more than a mere outline of a subject can well be expected. The author has, however, boiled down sufficient photographic information to enable the beginner who follows its teachings to successfully produce pictures according to the more important processes.

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PHOTOGRAPHY FOR YOUNG PEOPLE.—By Tudor Jenks. Published by Frederick A. Stokes Co., New York. Price, 1.50 net.

While this is a book which according to its title is primarily written for young folks there is much of interest and value between its covers for the "grown-ups" as well. The style is simple and the story of photography is told in a most readable way. As a work for the beginner it is one that can be well used and the author has performed a difficult task in a careful, painstaking and satisfactory manner.

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COLOR PHOTOGRAPHY AND OTHER RECENT DEVELOPMENTS OF THE ART OF THE CAMERA.—A special summer number of *The Studio,"* published by the John Lane Co., New York City. Price, cloth, $3.00 net, postage, 35 cts.

The publishers of *The Studio* have gotten out a very creditable work in the usual artistic and sumptuous style that characterizes the publications of nearly all of the work connected with this leading American art magazine.

The value of the book aside from its history of the progress made in color photography lies rather in the series of reproductions in monochrome of some fine photographs of such well-known workers as Coburn, Steiglitz, Demachy, Hofmeister, Dührkoop, Perscheid, Rey, and many others, than in the autochromes themselves. This may be partly due to the present scarcity of good examples readily accessible to the publishers. The real reason possibly is found explained in the editor's prefatory note. "No pains have been spared to give in each case a true representation of the autochrome as it appears when held up to the light; but it will be readily understood that, owing to the peculiar nature of the originals—which exist, of course, only as transparencies—these colored reproductions are exceedingly difficult to accomplish."

COPYING GLASS POSITIVES.—Glass positives, which many non-photographers believe to be Daguerreotypes, are really negative pictures on glass, made by the wet collodion process, with special pains to keep the image of a white color. Black varnish was then applied, either to the glass side or to the film, and as a result the picture looked a positive one, just as a negative bleached in mercury to intensify it looks like a positive. It might be supposed that to copy such a photograph nothing need be done but to remove the varnish and print from the negative. But this is not the case. When the varnish is on the film itself, its removal is a very risky proceeding. When it is on the glass side, it may easily be got off, but the resulting negative was neither exposed nor developed to give an image that would print, and therefore will not yield a satisfactory result. The best plan—and one involving no risk at all—is to fix the positive up in a good light and to photograph it just as if it were a print.

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MENDING PORCELAIN DISHES.—Large porcelain dishes are expensive, so that if it is possible to mend them when broken a considerable economy will be effected. This can be be done with a mixture of glycerine and litharge, mixing them up to form a very stiff paste. The broken edges are anointed with glycerine, the paste is applied, and they are brought into close contact and tied up like that for forty-eight hours. The joint will be found to be perfect.

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COPYING PHOTOGRAPHS.—When a soiled and crumpled photograph is to be copied, the following preliminary treatment will greatly improve the result. Half an ounce of white wax should be dissolved in four ounces of alcohol by gentle heat. The bottle containing the mixture may be stood in warm water for the purpose. Some of this is then spread upon a piece of swan's down calico, and gently rubbed over the broken creased photograph until it is dry. To print is then placed in a printing frame behind a piece of clear glass, set up an angle of 45° with the window, and photographed.—*Camera Craft.*